I CLAIM:

1. A vehicular centrifugally operated master friction clutch (20) for coupling an output member (136) of an engine (18) to a transmission input shaft (28), said clutch including a driving member assembly (60) fixedly rotatable with said engine output member and a driven member assembly (62) rotatable with said transmission input shaft, said clutch comprising:

a plurality of flyweights (110) carried by said driving member assembly for unitary rotation therewith and radial movement relative thereto;

return members (114) urging said flyweights radially inwardly;

wedging members (120) fixed to said flyweights for radial movement therewith, said wedging members received between opposed surfaces (124 and 126) of a relatively axially fixed reaction plate (125) and an axially movable plate (128), a first of said surfaces (126) defining a plurality of ramped portions (148) extending radially outwardly and axially toward the other of said surfaces whereby as said wedging members moves radially outwardly along said ramped portions said axially movable plate will be urged in an axial direction away from said reaction plate;

an axially movable pressure plate (130) rotatable with said driving member assembly for applying a clamping force (CF) to frictionally engage a friction member (140/142) rotatable with said input shaft with a friction member (136A/104/130A) rotatable with said driving member assembly, and

a resilient member (132) axially interposed between said axially movable plate and said pressure plate for limiting the magnitude of said clamping force.

2. The centrifugally operated master friction clutch of claim 1 wherein said engine has a known idle speed and said flyweights and return members are configured such that said wedging members will be positioned radially inwardly of said ramped portions of said first of said surfaces when said driving member is rotating at a speed no greater than said idle speed.

3. The centrifugally operated master friction clutch of claim 1 wherein said output member is an engine flywheel (136).

4. The centrifugally operated master friction clutch of claim 1 wherein said flyweights are pivotably (112) mounted on said driving member assembly.

5. The centrifugally operated master friction clutch of claim 1 wherein said return members are compression springs.

6. The centrifugally operated master friction clutch of claim 1 wherein said wedging members are rollers rotatably carried by said flyweights.

7. The centrifugally operated master friction clutch of claim 1 wherein said relatively axially fixed plate (125) is associated with a wear adjustment mechanism (125A).

8. The centrifugally operated master friction clutch of claim 1 wherein said resilient member is a compression spring.

9. The centrifugally operated master friction clutch of claim 1 wherein said resilient member is a belleville washer.

10. The centrifugally operated master friction clutch of claim 1 wherein said clutch has a degree of engagement dependent upon the rotational speed of said driving member, said clutch being disengaged when said driving member is rotating at an engine idle speed, said clutch becoming incipiently engaged when said driving member is rotating at an incipient engagement engine speed (ES_{IE}) greater than said engine idle speed ($ES_{IE}>ES_{IDLE}$), said clutch achieving a maximum engagement (74/76) when said driving member is rotating at at least a lockup engine speed (ES_{LOCKUP}), said lockup engine speed greater than said incipient engagement engine speed ($ES_{LOCKUP} > ES_{IE}$), said clutch remaining at the maximum engagement when said driving member is rotating at a disengagement engine speed ($ES_{DISENGAGE}$) less than said lockup engine speed ($ES_{LOCKUP} > ES_{DISENGAGE}$).

11. The centrifugally operated master friction clutch of claim 1 wherein said first of said surfaces (126) defining said ramped portions (148) defines a further portion (150) located radially outwardly of said ramped portion and not extending axially towards said other surface (124) whereby movement of said wedging member radially outwardly along said further portion will not further urge said axially movable plate axially away from said

reaction plate.

12. A vehicular drivetrain (10) comprising an engine (18), a change gear transmission (12) and a centrifugally operated master friction clutch (20) for coupling an output member (136) of said engine to a transmission input shaft (28), said centrifugally operated master friction clutch including a driving member assembly (60) fixedly rotatable with said engine output member and a driven member assembly (62) rotatable with said transmission input shaft, said drivetrain characterized by:

said clutch comprising:

a plurality of flyweights (110) carried by said driving member assembly for unitary rotation therewith and radial movement relative thereto;

return members (114) urging said flyweights radially inwardly;

wedging members (120) fixed to said flyweights for radial movement therewith, said wedging members received between opposed surfaces (124 and 126) of a relatively axially fixed reaction plate (125) and an axially movable plate (128), a first of said surfaces (126) defining a plurality of ramped portions (148) extending radially outwardly and axially toward the other of said surfaces whereby as said wedging members moves radially outwardly along said ramped portions said axially movable plate will be urged in an axial direction away from said reaction plate;

an axially movable pressure plate (130) rotatable with said driving member assembly for applying a clamping force (CF) to frictionally engage a friction member (140/142) rotatable with said input shaft with a friction member (136A/104/130A) rotatable with said driving member, and

a resilient member (132) axially interposed between said axially movable plate and said pressure plate for limiting the magnitude of said clamping force;

said engine having a known idle speed; and

said flyweight and return members configured such that said wedging members will be positioned radially inwardly of said ramped portion of said surface when said driving member assembly is rotating at a speed no greater than said idle speed.

13. The drivetrain of claim 12 wherein said centrifugally operated master friction clutch has a degree of engagement dependent upon the rotational speed of said driving member, said clutch being disengaged when said driving member is rotating at said

engine idle speed, said clutch becoming incipiently engaged when said driving member is rotating at an incipient engagement engine speed (ES_{IE}) greater than said engine idle speed ($ES_{IE}>ES_{IDLE}$), said clutch achieving a maximum engagement (74/76) when said driving member is rotating at at least a lockup engine speed (ES_{LOCKUP}), said lockup engine speed greater than said incipient engagement engine speed ($ES_{LOCKUP} > ES_{IE}$), said clutch remaining at the maximum engagement when said driving member is rotating at a disengagement engine speed ($ES_{DISENGAGE}$) less than said lockup engine speed ($ES_{LOCKUP} > ES_{DISENGAGE}$).

14. The drivetrain of claim 12 wherein said surface (126) defining said ramped portion (148) defines a further portion (150) located radially outwardly of said ramped portion and not extending axially towards said other surface (124) whereby movement of said wedging member outwardly along said further portion will not further urge said axially movable plate axially away from said reaction plate.

15. A vehicular centrifugally operated master friction clutch (20) for coupling an output member (136) of an engine (18) to a transmission input shaft (28), said clutch including a driving member assembly (60) fixedly rotatable with said engine output member and a driven member assembly (62) rotatable with said transmission input shaft, said clutch comprising:

a plurality of flyweights (110) carried by said driving member assembly for unitary rotation therewith and radial movement relative thereto;

return members (114) urging said flyweights radially inwardly;

actuation members carried by said flyweights for movement therewith, said actuation members acting on an axially movable plate (128) whereby as said flyweights move radially outwardly said axially movable plate will be urged in an axial direction away from an axially fixed reaction plate;

an axially movable pressure plate (130) rotatable with said driving member assembly for applying a clamping force (CF) to frictionally engage a friction member (140/142) rotatable with said input shaft with a friction member (136A/104/130A) rotatable with said driving member assembly, and

a resilient member (132) axially interposed between said axially movable plate and said pressure plate for limiting the magnitude of said clamping force.

16. The centrifugally operated master friction clutch of claim 15 wherein said engine has a known idle speed and said flyweight and return members are configured such that said actuation members will be positioned not to urge said axially movable plate when said driving member is rotating at a speed no greater than said idle speed.

17. The centrifugally operated master friction clutch of claim 15 wherein said flyweights are pivotably (112) mounted on said driving member assembly.

18. The centrifugally operated master friction clutch of claim 15 wherein said return members are compression springs.

19. The centrifugally operated master friction clutch of claim 15 wherein said actuation members are rollers rotatably carried by said flyweights.

20. The centrifugally operated master friction clutch of claim 15 wherein said relatively axially fixed reaction plate (125) is associated with a wear adjustment mechanism (125A).

21. The centrifugally operated master friction clutch of claim 15 wherein said resilient member is a Belleville washer.

22. A vehicular centrifugally operated master friction clutch (20) for coupling an output member (136) of an engine (18) to a transmission input shaft (28), said clutch including a driving member assembly (60) fixedly rotatable with said engine output member and a driven member assembly (62) rotatable with said transmission input shaft, said clutch comprising:

a plurality of flyweights (110) carried by said driving member assembly for unitary rotation therewith and radial movement relative thereto;

return members (114) urging said flyweights radially inwardly;

wedging members (120) fixed to said flyweights for radial movement therewith, said wedging members received between opposed surfaces (124 and 126) of a relatively axially fixed reaction plate (125) and an axially movable plate (128), a first of said surfaces (126) defining a first portion (148), said first portion being ramped and extending radially outwardly and axially toward the other of said surfaces whereby as said

wedging member moves radially outwardly along said first portion said axially movable plate will be urged in an axial direction away from said reaction plate, said first of said surfaces (126) also defining a second portion (150) located radially outwardly of said first portion (148) and extending axially towards said other surface (124) by a lesser degree then said first portion whereby movement of said wedging member radially outwardly along said second portion (150) will have a lessor tendency to increase or decrease urging of said axially movable plate in said axial direction than will movement of said wedging member radially along said first portion;

an axially movable pressure plate (130) rotatable with said driving member assembly for applying a clamping force (CF) to frictionally engage a friction member (140/142) rotatable with said input shaft with a friction member (136A/104/130A) rotatable with said driving member assembly, and

a resilient member (132) axially interposed between said axially movable plate and said pressure plate for limiting the magnitude of said clamping force.

23. The centrifugally operated master friction clutch of claim 22 wherein said engine has a known idle speed and said flyweight and return members are configured such that said wedging members will be positioned radially inwardly of said first portion of said one surface when said driving member is rotating at a speed no greater than said idle speed.

24. The centrifugally operated master friction clutch of claim 22 wherein said clutch has a degree of engagement dependent upon the rotational speed of said driving member, said clutch being disengaged when said driving member is rotating at said engine idle speed, said clutch becoming incipiently engaged when said driving member is rotating at an incipient engagement engine speed (ES_{IE}) greater than said engine idle speed ($ES_{IE} > ES_{IDLE}$), said clutch achieving a maximum engagement (74/76) when said driving member is rotating at at least a lockup engine speed (ES_{LOCKUP}), said lockup engine speed greater than said incipient engagement engine speed ($ES_{LOCKUP} > ES_{IE}$), said clutch remaining at the maximum engagement when said driving member is rotating at a disengagement engine speed ($ES_{DISENGAGE}$) less than said lockup engine speed ($ES_{LOCKUP} > ES_{DISENGAGE}$).

25. The centrifugally operated master friction clutch of claim 1 wherein each of

the flyweights pivots about an associated pivot axis, the pivot axes being fixedly located with respect to the axially fixed reaction plate and the axially movable plate and the wedging members being disposed at a point on the flyweight distal to the pivot axis and the wedging members each defining a wedging axis oriented substantially normal to the pivot axis.

26. The vehicular drivetrain of claim 12 wherein each of the flyweights pivots about an associated pivot axis, the pivot axes being fixedly located with respect to the axially fixed reaction plate and the axially movable plate and the wedging members being disposed at a point on the flyweight distal to the pivot axis and the wedging members each defining a wedging axis oriented substantially normal to the pivot axis.

27. The vehicular centrifugally operated master friction clutch of claim 15 wherein each of the flyweights pivots about an associated pivot axis, the pivot axes being fixedly located with respect to the axially fixed reaction plate and the axially movable plate and the wedging members being disposed at a point on the flyweight distal to the pivot axis and the wedging members each defining a wedging axis oriented substantially normal to the pivot axis.

28. The vehicular centrifugally operated master friction clutch of claim 22 wherein each of the flyweights pivots about an associated pivot axis, the pivot axes being fixedly located with respect to the axially fixed reaction plate and the axially movable plate and the wedging members being disposed at a point on the flyweight distal to the pivot axis and the wedging members each defining a wedging axis oriented substantially normal to the pivot axis.